

WH: Find the distance and
midpoint between $(\overset{x_2}{3}, \overset{y_2}{4})$
and the origin. $(\overset{x_1}{0}, \overset{y_1}{0})$

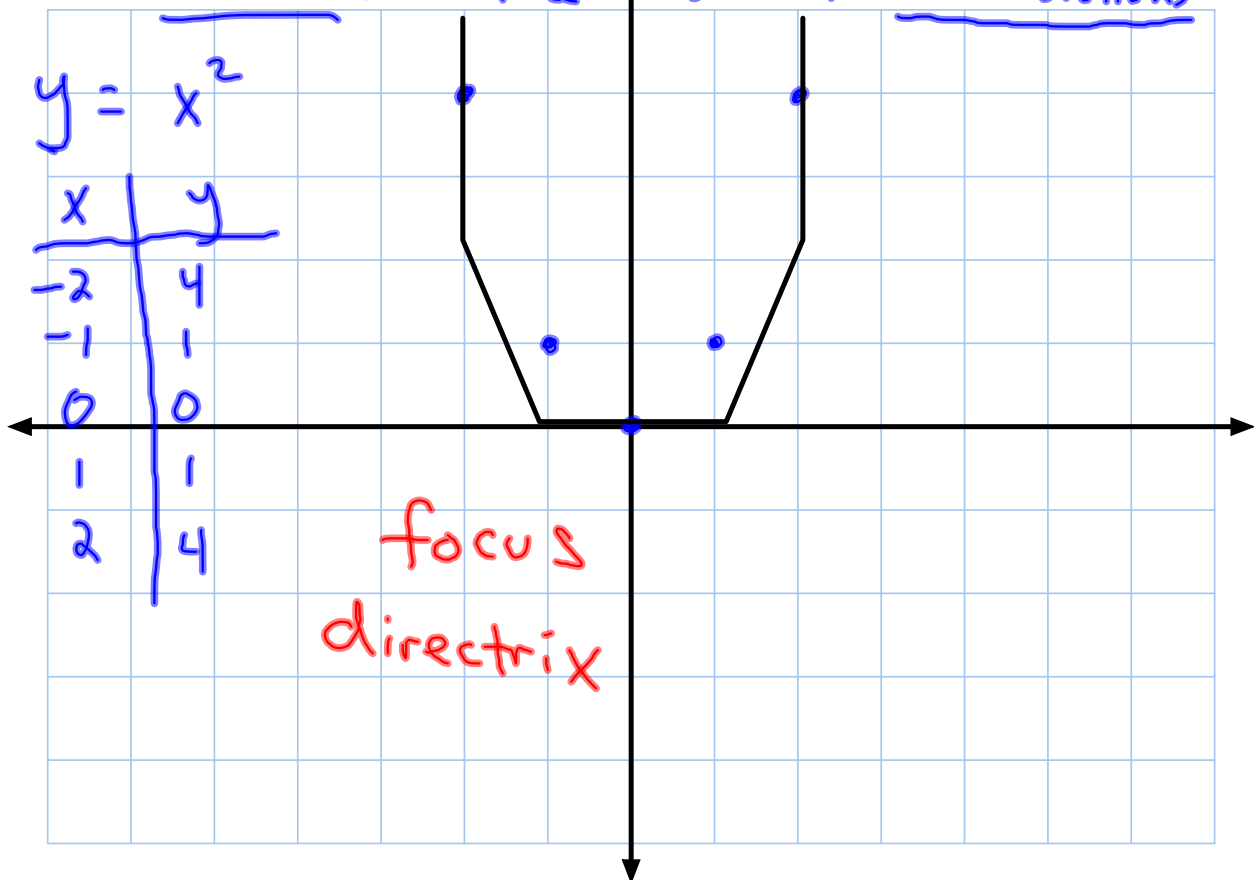
(You need your text book today!!)
Section 9.1

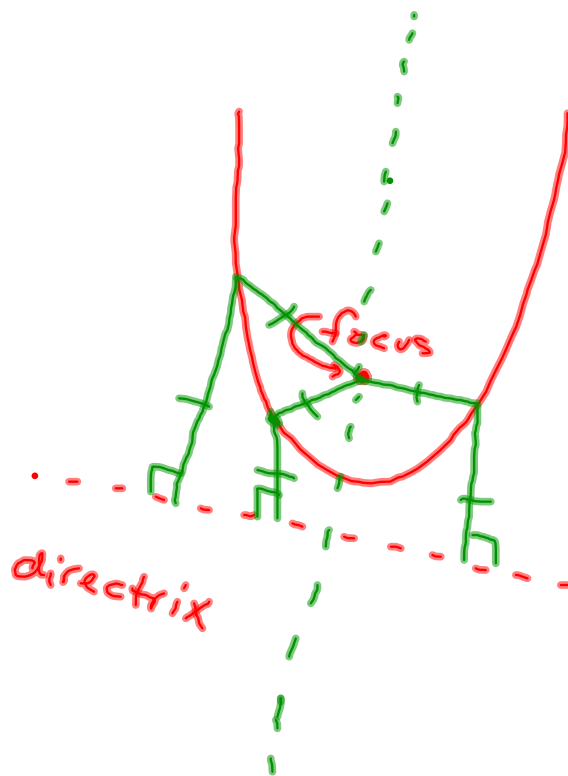
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \sqrt{(3-0)^2 + (4-0)^2}$$
$$= \sqrt{9+16}$$
$$= \sqrt{25} = \boxed{5}$$

$$\text{mdpt} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$= \left(\frac{0+3}{2}, \frac{0+4}{2} \right) = \boxed{(1.5, 2)}$$

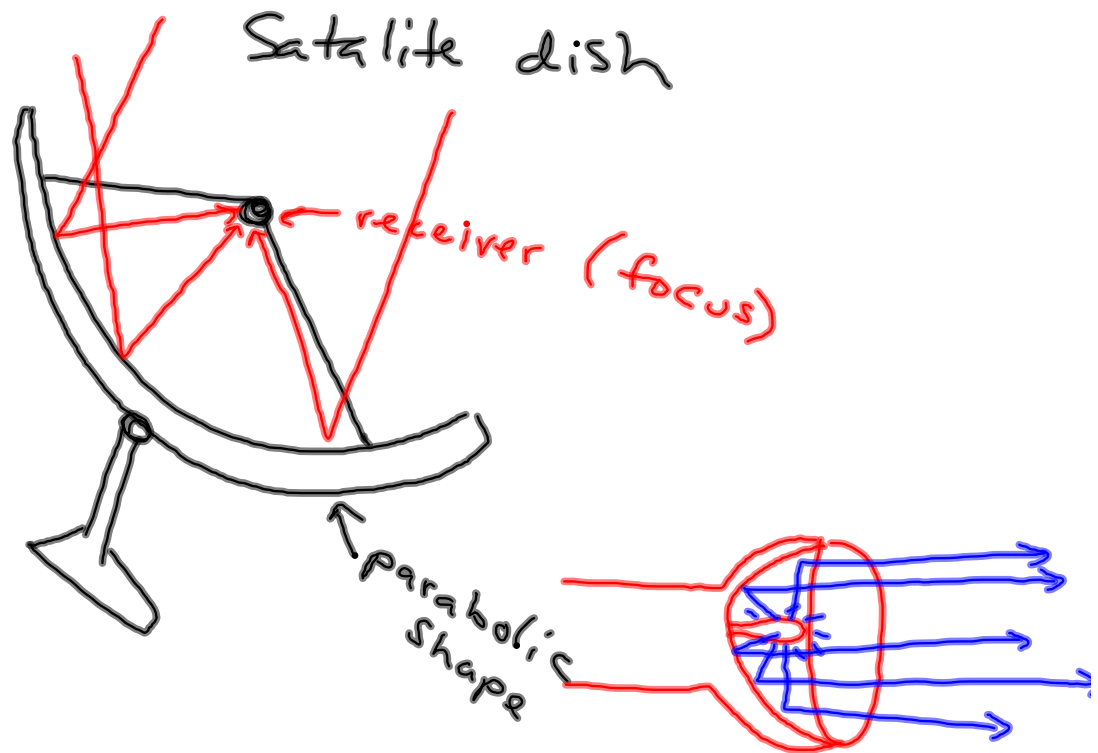
Parabolas: The "U" of conic sections





the distance from
the focus to a
point on a parabola
must be congruent
from that point to
the directrix on a
..... \perp line.

Parabola : concentrate a signal.



Finding the focus and directrix

$$y = ax^2$$

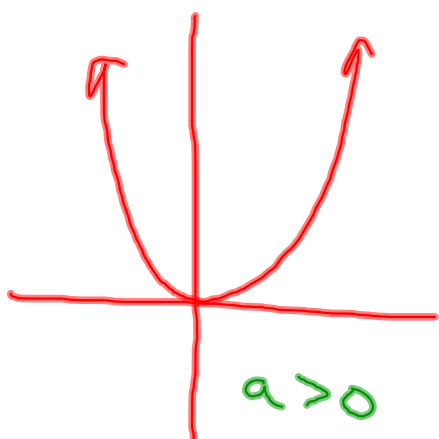
$$y = ax^2 + \cancel{bx + c}$$

$$f = \frac{1}{4a}$$

$$x = ay^2$$

.

$$y = ax^2$$

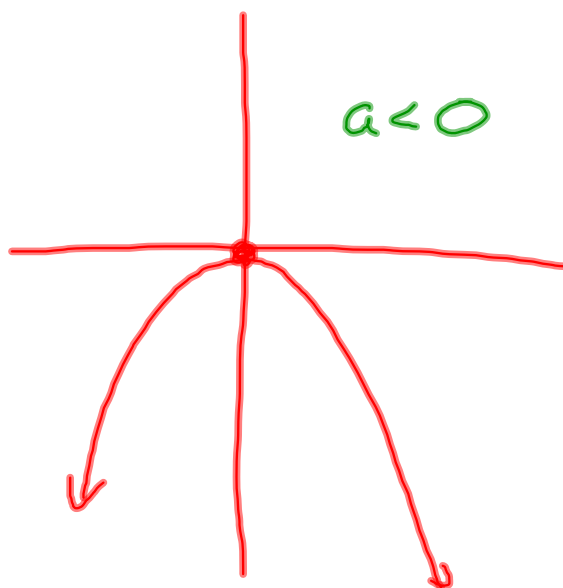
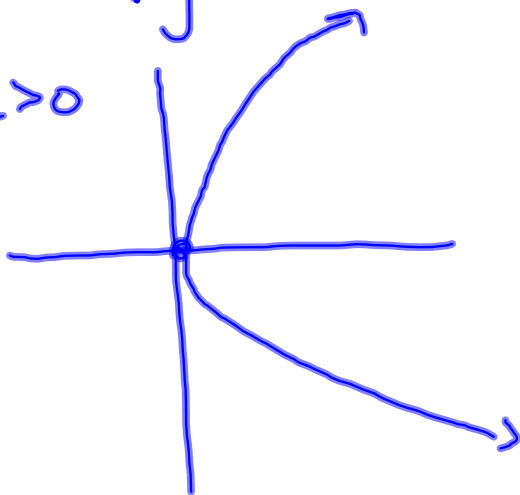


$a > 0$

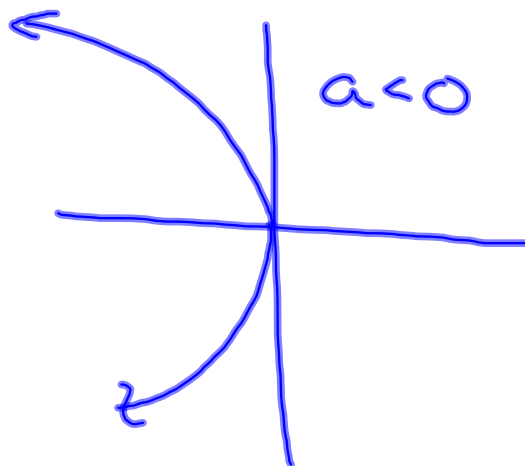
(assume $a \neq 0$)

$$x = ay^2$$

$a > 0$



$a < 0$



$a < 0$

Draw the graph of $-8x = y^2$.

Identify focus & directrix.

① get non-squared term by itself

$$\frac{-8x}{-8} = \frac{y^2}{-8}$$

② identify "a" value

$$x = -\frac{1}{8} y^2$$

$$x = a y^2$$

$$a = -\frac{1}{8}$$

③ Solve for focus length

$$f = \frac{1}{4a} = \frac{1}{4(-\frac{1}{8})} \\ = -\frac{1}{\frac{1}{2}} = -2$$

④ Graph $x = -\frac{1}{8} y^2$

focus: $(-2, 0)$

$x = 2$
directrix

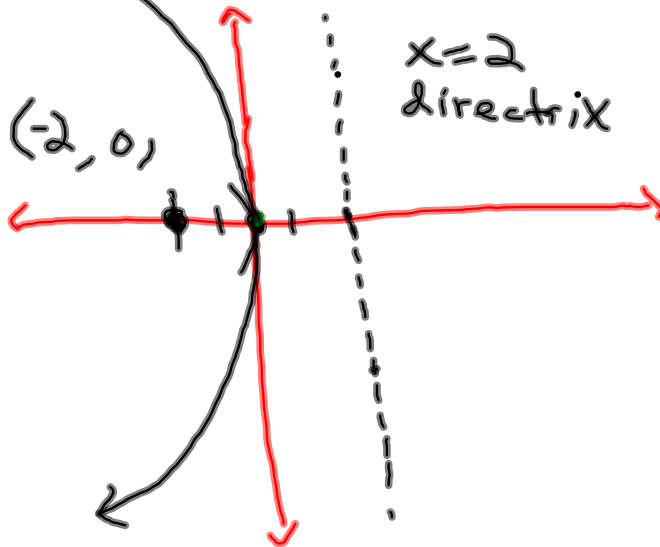
Parabola

① opens ?

② focus (x, y)

③ directrix
 $x = \text{vertical}$
or
 $y = \text{horizontal}$

P622
#1, 2
groups of
2-3



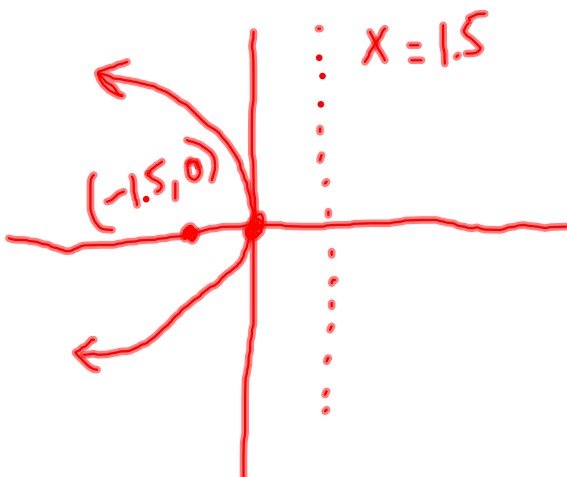
$$\textcircled{1} \quad \frac{y^2}{-6} = \frac{-6x}{-6}$$

$$-\frac{1}{6}y^2 = x$$

$$a = -1/6$$

$$f = \frac{1}{4a} = \frac{1}{4(-1/6)}$$

$$f = -1.5$$



$$\textcircled{2} \quad x^2 = 2y$$

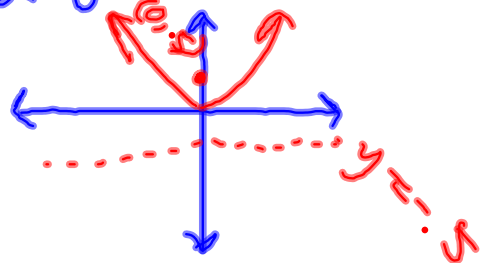
$$\frac{x^2}{2} = \frac{2y}{2}$$

$$y = \frac{1}{2}x^2$$

$$x = ay^2 \rightarrow a = 1/2$$

$$f = \frac{1}{4a} = \frac{1}{4(1/2)} \rightarrow 0.5$$

$$\text{Graph: } y = \frac{1}{2}x^2$$



HW
p623
#3-6
Show work

☆☆☆ Consensus Graph parabola

Getit

kinda

huh?

